that newspapers had nothing to do with either literature or the fine arts I decided against the institution on all the points raised. It was not one for science, literature, or the fine arts; it was not supported by voluntary contributions, and therefore was not exempt from rates;—a decision which appears to us quite preposterous. The intention of the Act is to facilitate the association of persons for mutual instruction, the dissemination of knowledge, and the prosecution of literary, scientific, and artistic pursuits. Scores of institutions throughout the kingdom have been exempted from the payment of taxes, as it was intended they should be; and it is to be hoped, as much for the sake of those as their own, that the directors of the Russell Institution will carry the matter farther, and let a more competent authority decide.

HYDRO-ELECTRIC COMBUSTION IN LOCOMOTIVE AND OTHER ENGINES.

An idea is said to have been broached by the surveyor of the Paris and Orleans Railway, Mr. Gaspard Cipri, which promises, if practical, to revolutionize the main principles of the locomotive. If we understand rightly what is rather ambiguously expressed, he proposes by means of electricity (whether as developed in Armstrong's hydro-electric steam-boiler, or how otherwise is not stated), to neutralize the chemical attraction of the oxygen and hydrogen in the vapour, or, as he calls it, the gas of water, and to employ the oxygen thus liberated in feeding the fuel in the furnace, by conducting the vapour or steam thus decomposed, in a close current (from the boiler it is presumed), along and under the grating, to the exclusion of the air altogether after the fire has been once lighted and the steam once generated and put into circulation; by which means he will be enabled, it is said, so to arrange the fire, that it shall be altogether surrounded by the boiler surfaces, and thus not only economise the heat generated, but also consume the smoke from the fuel, by using up its elastic force in the pistons, along with that of the steam, so that no chimney would be required, and the expense of tunnels and bridges would be thus also economised.

We hope the source, the measure, and the expense, of the galvanic or electric power requisite to decompose the vapour of water thus continuously into its constituent gases, have been maturely considered. Aqueous vapour is, in fact, neither more nor less than hydrogen *already burnt* by oxygen, or oxygen with its power of combustion already exhausted; and the combustion thus already completed must admittedly be *undone*, as it were, by the decompositive electrical agency, ere the oxygen which the vapour contains can be again used up in burning the fuel for the engine. To us this sounds very much like robbing Peter to pay Paul, or expending energies equivalent to those eliminated in combustion, for the purpose of undoing what was done in their elimination, or of decombusting the already combust (if we may be allowed to say so), merely in order to reproduce combustion, in a vicious circle, in which a power as great as the power 'economised' may ever be requisite to the acquisition. There may be something in the constitution of Armstrong's hydro-electric boiler, however, which, adapted to the boiler of the locomotive or other engine, may enable the engineer to economise heat, in the way suggested, without the expense of any other agency by which the economy would be neutralised.

THE DIORAMA.—The proprietors of this establishment have added a fine view of Mount Ætna to the Interior of St. Mark's at Venice, previously exhibited there, and which, like the latter, is painted by M. Diosse, a pupil of M. Daguerre. The mountain is shewn under three aspects—evening, sunrise, and during an eruption; the well-known remains of the theatre at Taormina are seen on the left. It is a charming picture, truthful and effective, and will well repay a visit; but the interior of St. Mark's, to those who have not already seen it, offers even greater attraction. The effect of this interior, as seen lighted up for service, is grand.

SURVEYOR OF PAVEMENTS, ST. PAUL'S, COVENT GARDEN.

ABOUT a fortnight ago we received information that the advertisement announcing a vacancy in the office of surveyor of pavements, in St. Paul's, Covent Garden, and inviting candidates, was a mere blind; that it was arranged that Mr. Beck, the churchwarden, a tailor by trade, was to have it, and that those who took any trouble in it would merely waste their time. Fearing to commit an injustice, we kept back the statements; but the result confirming the truth of them, we feel bound to condemn this illustration of a course which we have on more than one occasion strongly protested against.

It appears that there were twenty-two candidates. The farce of election was proceeded with, and the number reduced to five, who were, after due declaration, admitted to the contest. They consisted of—Mr. Beck, the present churchwarden; Mr. Hakewill, the district-surveyor; and Messrs. Bannister, Lakeman, and Pennington, surveyors; when it further appeared by the votes that 21 were recorded for Mr. Beck, and none for either of the other candidates.

Since the above was written we have received a letter, signed P. Shae, Hart-street, Covent Garden, the late surveyor, complaining of the way in which he has been treated. We insert the following portion of it without comment, as we know nothing of the circumstances of the discharge of the writer. Our complaint relates only to the appointment of the new *surveyor*.

"After my having performed the duties of surveyor of pavements for above fifteen years, I flatter myself to the satisfaction of the majority of the inhabitants, whose signatures I appealed to as testimonials, certainly so as never to have any charge of incompetency alleged against me,—a jobbing tailor, who was made a churchwarden last year, has procured my removal, and himself to be put in my place, in spite of all the feeling of, as I think, common justice, expressed in my behalf. Now, Sir, I beg to ask, whether such appointment—made during the time of his holding office, and as such an *ex-officio* member of the paving committee, against the express directions of a local Act, and after the time allowed in the Metropolitan Paving Act (Michael Angelo Taylor's) has expired for the election of a surveyor after a vacancy,—can be considered to be legal, or whether such election is null and void?"

RAILWAY JOTTINGS.

A NEW sort of carriage-spring, in which elasticity and strength are said to be obtained with light plates, and at about one-third less cost, has been recently registered by Messrs. Blake and Parkin, of Sheffield. It consists of three inverted curves, two of which unite and run into each other, so as to have a triple bearing, while the third curve below bears with its ends against the middle swell of each of the upper, to which it is attached by bolts. ——The *Worcester Journal* states that the bridge lately erected on the Oxford, Worcester, and Wolverhampton line, at Dudley, over the Birmingham turnpike-road, near the castle, has a second time given way. The workmen, it appears, had begun to build the side wings to the bridge, and had sunk about 18 feet below the foundation of it, whereby the foundation was exposed to the atmosphere, which so acted upon the stone which supported it, that it caused it to slack, and become otherwise greatly impoverished. Before the the work could be finished, a large portion of one end of the bridge, together with a considerable segment of the arch itself, came down, fortunately without accident to the workmen. Timber props have been put up, and the "unfortunate" bridge is undergoing such repairs as will, it is said, completely restore its strength and safety, though, we much fear, without a sufficient restoration of its doubly-damaged reputation.——The great iron cylinder which is to be planted in deep water in the Tamar, off Saltash, preparatory to the erection of the bridge there for the Cornwall line, was launched on the 26th ult., and safely floated off to the hulks moored for its deposit, in six hours. The purchase-blocks for the occasion were made, it is said, on Botheway's new principle of internal iron-binding, and although not above 24 inches, were equal to 30 or 36 inch Government-blocks.——The Stockport viaduct, erected in 1839-40, required 400,000 cubic feet of stone and 11,000,000 bricks. It is 1,793 feet long, with 26 arches, 22 of them 63 feet span each. It is 4 feet higher than the Menai bridge. The height of the parapet above the river is 111 feet, and that of the rails above the foundations of the arches 120 feet. Its cost was 70,000*l*.——The Manchester, Sheffield, and Lincolnshire line is progressing near Retford, where the tunnel of half a mile is being worked through the Clarbor hill, and a bridge to the south of the town is nearly completed. A bridge of three arches over the line has given some trouble in piling, &c., from the peaty and insecure nature of the ground, which is also full of fir-trees, 7 feet below the surface, and soft as clay till exposed, when they shrink much, and become hard as stone. Six thousand bricks have been already used in the erection of this structure, which is nearly ready for the battlements.

INDUSTRIAL KNOWLEDGE.*

WE are sometimes told that education has very little to do with manual industry; that the one relates to the head and the heart, while the other deals only with muscle and sinew. "Look," it is said, "how many are there, who, having received an efficient education, start in trade, and fail. Look, again, how many succeed eminently in trade, who have received no education worthy of the name." Yes: if education consist in making Greek and Latin an end, instead of means to an end—if a whole course of school instruction pass without one lesson relating to the physical world around us—then, indeed, may we well understand how an educated man may fail in trade or manufacture. But if education consist in the right development of all the faculties that God has given us; then is the man who steadily watches and studies the external world, and the power he has over it, acquiring industrial knowledge at every step. Nearly all industry consists in the transformation and adaptation, by human means, of materials abundantly scattered around us; and he who uses his external senses and his "common-sense" in studying the properties of these varied materials, is acquiring the elements of industrial knowledge, which, even if he had not the advantage of that more systematic education which expands the intellect and warms the heart, will one day be fruitful of good to him, though the mode and the moment may be equally beyond his ken. "A young man," says Sir Robert Kane, "wanting to sell spectacles in London, petitions the corporation to allow him to open a little shop, without paying the fees of freedom, and he is refused. He goes to Glasgow, and the corporation refuse him there. He makes acquaintance with some members of the University, who find him very intelligent, and permit him to open his shop within their walls. He does not sell spectacles and magic lanterns enough to occupy all his time; he occupies himself at intervals in taking asunder and remaking all the machines he can come at. He finds there are books on mechanics written in foreign languages; he borrows a dictionary, and learns those languages to read those books. The University people wonder at him, and are fond of dropping into his little room, in the evenings, to tell him what they are doing, and to look at the queer instruments he constructs. A machine in the University collection wants repairing, and he is employed. He makes it a new machine. The steam-engine is constructed; and the giant mind of Watt stands out before the world—the author of the industrial supremacy of his country, the herald of a new force of civilization. But was Watt educated? Where was he educated? At his own workshop, and in the best manner. Watt learned Latin, when he wanted it for his business. He learned French and German; but these things were tools not ends. He used them to promote his engineering plans, as he used lathes and levers."

* From "The Voice of the People, a supplement to all newspapers," a cheap weekly periodical, recently started by the indefatigable, clear-headed and right-minded Charles Knight.

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